Local Climatological Data (LCD) Dataset Documentation

The Local Climatological Data (LCD) summaries provide a synopsis of climatic values for a single weather station over a specific month. Currently the summaries are prepared for hundreds of cities across the United States and additional worldwide locations will be added at a later time. The data is a product of surface observations from both manual and automated (AWOS, ASOS) stations that are taken from the National Climatic Data Center's Integrated Surface Data (ISD) dataset. Climatic values given include hourly, daily, and monthly measurements of temperature, dewpoint, humidity, winds, sky condition, weather type, atmospheric pressure and more.

General conventions: Times are in Local Standard Time (LST) unless otherwise noted. Temperatures are given in whole degrees F or tenths of degrees C (as noted below). Wind speeds are in miles per hour, with wind direction given using a 360 degree compass indicating the direction from which the wind was blowing with respect to true north (e.g. 360 = winds blowing from true north, 180 = south, etc.). Precipitation amounts are given in inches, usually to the nearest hundredth, unless otherwise noted. Departures from normal are given for some elements using 1981-2010 as the standard for normal. Further information concerning these generalities and units of measure are given where needed for each section below.

Table of Contents:

Hourly Observations:

The month and year as well as the station information (location, latitude, longitude, elevation, time zone) are included in the heading at the top of the table. A description of the data values follows:

Date: Date (day of month given in two digits) Note: Month and year are given in the heading.

Time: Time of observation given as a 4-digit number using a 24-hour clock in local standard time (e.g. 1751 = 5:51 pm LST).

Station Type: Code showing source or combination of sources used in creating the observation. Decoding information for this is found in Integrated Surface Data documentation (www1.ncdc.noaa.gov/pub/data/ish/ish-format-document.pdf) in Control Data Section position 28.

Sky Conditions: A report of each cloud layer (up to 3) giving the following information.
Each layer given in the following format: cc-xxx where:
1) cc is Coverage: CLR (clear sky), FEW (few clouds), SCT (scattered clouds), BKN (broken clouds), OVC (overcast), VV (obscured sky), 10 (partially obscured sky).
2) ll is Layer amount used in conjunction with coverage code above. Given in eighths (aka "oktas") of sky covered by cloud. Specifically 00-08 indicates the number of oktas that cloud layer takes up in the total sky. 00

corresponds to CLR, 01-02 corresponds to FEW, 03-04 corresponds to SCT, 05-07 corresponds to BKN and 08 corresponds to OVC. 09 indicates an obscuration meaning the sky cannot be seen due to obscuring phenomena (e.g. smoke, fog, etc.). 10 indicates a portion of the sky is obscured (i.e. partial obscuration). For additional information see Integrated Surface Data documentation. (http://www1.ncdc.noaa.gov/pub/data/ish/ish-format-document.pdf) in Cloud and Solar Data portion of Additional Data Section.

3) xxx is the Cloud base height at lowest point of layer. In the case of an obscuration this value represents the vertical visibility from the point of observation. Given in hundreds of feet (e.g. 50 = 5000 ft, 120 = 12000 feet). In some cases a cloud base height will be given without the corresponding cloud amount. In these case the cloud amount is missing or not reported.

Up to 3 layers can be reported however by definition when clear skies are reported it will be reported as only one layer as CLR-00. Obscurations will be reported as VV-xx where xx is the vertical visibility into the obscuring phenomena.

Additional information about cloud cover data: The Integrated Surface Data documentation further defines the coverage of a layer in oktas (i.e. eighths) or tenths of sky covered by cloud as per the following table:

0 oktas/0 tenths is defined as CLR (clear sky)
1-2 oktas/1-3 tenths is defined as FEW (few clouds)
3-4 oktas/4-5 tenths is defined as SCT (scattered clouds)
5 to less than 8/6 to less than 10 is defined as BKN (broken clouds)
8 oktas/10 tenths is defined as OVC (overcast)
Partial obscuration - sky is partially obscured and therefore cloud coverage cannot be fully determined
Total obscuration - sky is completely obscured and therefore cloud coverage is not available

Note: Since up to 3 cloud layers can be reported, the full state of the sky can best be determined by the contraction given for the last layer. In other words if three layers are reported and the third layer uses BKN then the total state of sky is BKN which is similar in definition to “mostly cloudy.” OVC is similar to “cloudy” or overcast and FEW or SCT is similar to “partly cloudy.” It should also be noted that in cases where there are more than 3 cloud layers, the highest layers will not be reported.

For additional information see Integrated Surface Data documentation (http://www1.ncdc.noaa.gov: pub: data: ish: ish-format-document.pdf) in Cloud and Solar Data portion of Additional Data Section.

Visibility: The horizontal distance an object can be seen and identified given in whole miles. Note visibilities less than 3 miles may be given in smaller increments (e.g. 2.5).

Weather Type (AU|AW|MW): Weather types describe precipitation or obstructions to vision occurring at the time of observation. These are reported by automated sensors (AU or AW) and manually (MW) by human observation. AU elements are listed first and followed by “|” and followed by AW elements. After the AW elements there will be another “|” followed by the MW elements (e.g. “-RA:02|RA:61|RA:61”). In the preceding example -RA:02 is an AU element, RA:61 is an AW element and RA:61 is an MW element. It is not uncommon for one type of element to be reported without another. In other words, it is possible to have an AU element without an AW element or MW element. Definitions of contractions used are listed in the Present Weather Appendix at the end of the document.

Dry Bulb Temp (F): This is the dry-bulb temperature and is commonly used as the standard air temperature reported. It is given here in whole degrees Fahrenheit.

Dry Bulb Temp (C): This is the dry-bulb temperature and is commonly used as the standard air temperature reported. It is given here in tenths of a degree Celsius.

Wet Bulb Temp (F): This is the wet-bulb temperature. It is given here in whole degrees Fahrenheit.

Wet Bulb Temp (C): This is the wet-bulb temperature. It is given here in tenths of a degree Celsius.

Dew Point Temp (F): This is the dewpoint temperature. It is given here in whole degrees Fahrenheit.

Dew Point Temp (C): This is the dewpoint temperature. It is given here in tenths of a degree Celsius.

Rel Hum: This is the relative humidity given to the nearest whole percentage.

Wind Speed: Speed of the wind at the time of observation given in miles per hour (mph).

Wind Dir: Wind direction from true north using compass directions (e.g. 360 = true north, 180 = south, 270 = east, etc.). Note: A direction of "000" is given for calm winds.

Wind Gusts: Wind gusts occurring during time of observation. Given in miles per hour (mph).

Station Press.: Atmospheric pressure observed at the station during the time of observation. Given in inches of Mercury.

Press. Tend: Pressure tendency (In general a 0 through 3 here indicates an increase in pressure over previous 3 hours and a 5 through 8 indicates a decrease over the previous 3 hours and 4 indicates no change during the previous 3 hours). See ISD Documentation for further details.

Net 3-Hr Change: Difference in pressure over the past 3 hours. Prefixed with a "+" or "-" to indicate increase or decrease in pressure respectively. Given in inches of Mercury.

Sea Level Press.: Sea level pressure given in inches of Mercury.

Report Type: Indicates type of weather observation. See ISD Documentation for further details (positions 42-46 in Control Data Section).

Precip Total: Amount of precipitation in inches to hundredths over the past hour. For certain automated stations, precipitation will be reported at sub-hourly intervals (e.g. every 15 or 20 minutes) as an accumulated amount of all precipitation within the preceding hour.

Altimeter setting: Atmospheric pressure reduced to sea level using temperature profile of the "standard" atmosphere. Given in inches of Mercury.

Hourly Remarks:

Hourly Remarks present the raw surface observation data in the original format encoded into ICAO-standardized METAR format for global dissemination. Further information on decoding these observations can be found in the Federal Meteorological Handbook (FMH) No. 1, Surface Weather Observations & Reports (METAR). (add GOSIC or NWS link) Contact customer service at 828-271-4800 or ncdc.orders@noaa.gov for further information.

Hourly Precipitation Table:

The hourly precipitation data contained in the Hourly Observations are formatted into a 1 page table for easy viewing.

The hours of the day are on the horizontal axis in Local Standard Time and the days of the month are on the vertical axis. The liquid precipitation observation values given in inches to hundredths and are placed in the cell corresponding to the intersection of the day and hour. All quantities represent what amount of precipitation fell for the hour ending at the time indicated on the table.

Notes:
Blank/null = no precipitation was observed/reported for the hour ending at that date/time.
M = missing

Maximum Short Duration Precipitation: This table gives the greatest amount of precipitation to fall in the month over 12 different periods given in minutes (5, 10, 15, 20, 30, 45, 60, 80, 100, 120, 150 and 180). The top row value gives the maximum precipitation amount to the nearest hundredth of an inch and the middle row value gives the day of the month that the precipitation event ended. The third row value gives the ending time that the precipitation event ended using a 24-hour clock (Local Standard Time).

Notes:
* = Amounts included in following measurement; time distribution unknown
Blank/null = no precipitation was observed/reported
M = missing
T = indicates trace amount of precipitation

Daily Summary/Monthly Summary:

Daily Summary:

The month and year as well as the station information (location, latitude, longitude, elevation, time zone) are included in the heading at the top of the table. A description of the daily data values follows:

Date: Date (day of month given in two digits) Note: Month and year are given in the heading.

Temperature - Max: Maximum temperature for the day (in whole degrees Fahrenheit). An asterisk (*) is used to designate when a daily maximum temperature is also the extreme maximum for the month.

Temperature - Min: Minimum temperature for the day (in whole degrees Fahrenheit). An asterisk (*) is used to designate when a daily minimum temperature is also the extreme minimum for the month.

Temperature - Avg: Average temperature for the day (in whole degrees Fahrenheit)

Temperature - Dep: Average temperature's departure from (1981-2010) normal temperature (in whole Fahrenheit degrees using "+" and "-" to indicate above or below normal)

Temperature - ARH: Average daily relative humidity (in whole percent)

Temperature - ADP: Average daily dewpoint temperature (in whole degrees Fahrenheit)

Temperature - AWB: Average daily wet-bulb temperature (in whole degrees Fahrenheit)

Degree Days - Heat: Heating degree days (in whole degrees using a 65 degree F base)

Degree Days - Cool: Cooling degree days (in whole degrees using a 65 degree F base)

Sun - Rise: Time of sunrise using a 24-hour clock (Local Standard Time)

Sun - Set: Time of sunset using a 24-hour clock (Local Standard Time)

Weather (WT):** Daily occurrences of weather types. The 2-digit number in each designation corresponds to the WT (weather type code) used in GHCN-Daily dataset. For example WT01 in GHCN-Daily is represented as FG:01 (fog) in the LCD. Contractions used are given below.

FG:01 (WT01) - Fog, ice fog, or freezing fog (may include heavy fog)
FG+:02 (WT02) - Heavy fog or heavy freezing fog (not always distinguished from fog)
TS:03 (WT03) - Thunder
PL:04 (WT04) - Ice pellets, sleet, snow pellets or small hail
GR:05 (WT05) - Hail (may include small hail)
GL:06 (WT06) - Glaze or rime
DU:07 (WT07) - Dust, volcanic ash, blowing dust, blowing sand or blowing obstruction
HZ:08 (WT08) - Smoke or haze
BLSN:09 (WT09) - Blowing or drifting snow
FC:10 (WT10) - Tornado, water spout or funnel cloud
WIND:11 (WT11) - High or damaging winds
BLPY:12 (WT12) - Blowing spray
BR:13 (WT13) - Mist
DZ:14 (WT14) - Drizzle
FZDZ:15 (WT15) - Freezing drizzle
RA:16 (WT16) - Rain
FZRA:17 (WT17) - Freezing rain

SN:18 (WT18) - Snow, snow pellets, snow grains or ice crystals
UP:19 (WT19) - Unknown precipitation
MIFG:21 (WT21) - Ground fog
FZFG:22 (WT22) - Ice fog or freezing fog

Precipitation - Total Liquid Content (TLC): Water equivalent amount of precipitation for the day (in inches to hundredths) This is all types of precipitation (melted and frozen) .T indicates trace amount of precipitation

Precipitation - Snowfall: Daily amount of snowfall (in inches to the tenths). T indicates trace amount.

Precipitation - Snow Depth: Daily reading of snow on ground (in whole inches). T indicates trace amount.

Pressure - Avg Stn: Daily average station pressure (in inches of mercury, to hundredths)

Pressure - Avg SL: Daily average sea level pressure (in inches of mercury, to hundredths)

Wind - Avg Spd: Daily average wind speed in miles per hour miles per hour, to tenths)

Maximum Wind Speed - Peak Speed: peak wind speed for the day (in whole miles per hour)

Maximum Wind Speed - Peak Dir: direction of wind during peak wind speed for the day given as direction from which wind was blowing using a 360 degree compass with respect to true north

Maximum Wind Speed - Sust. Speed: maximum sustained wind speed for the day (in whole miles per hour). Note: For U.S. locations this is the fastest reported speed for the day that is sustained for at least 2 minutes for years 1994 and later. For earlier years it is the fastest reported speed sustained for at least 1 minute.

Maximum Wind Speed - Sust. Dir): direction of wind during maximum sustained wind speed for the day given as direction from which wind was blowing using a 360 degree compass with respect to true north

Monthly Summary:

The bottom section of the Daily Summary form includes information such as monthly maximum, minimum and mean temperatures, average dewpoint, wet-bulb and relative humidity, monthly total heating and cooling degree days, precipitation and snowfall totals, etc. Departures from normal (using 1981-2010 normals) are also included for both temperature, precipitation as well as a tally of the number of days selected temperature thresholds (max temperature >=90/<=32, min <=32/<=0) and precipitation thresholds (>=0.01 and >=0.10) were reached, number of snowfall days > = 1 inch, number of days thunderstorms or heavy fog are reported, etc. The month's greatest amount of precipitation to fall in 24 hours is also given (amount and date) as well as the 24 hour greatest snowfall (amount and date) and highest snow depth (height and date). Monthly and season-to-date totals are computed for heating and cooling degree day data and departures from normal are also given with these. The extreme highest and lowest sea -level pressures recorded and the dates they occurred are also given. Units used are consistent with what appears in the upper part of the table (described above). These data originate from the Integrated Surface Data (ISD). More very technical details regarding these observations can be found in the ISD documentation located at www1.ncdc.noaa.gov/pub/data/ ish/ish-format-document.pdf.

CSV and ASCII Data Files:

Customizable CSV and ASCII data output formats are available for the LCD data for usage in spreadsheet and database applications. Each row of the data begins with the station identification number (usually the contraction "WBAN:" followed by a 5-digit unique number assigned to the station). Optional fields following this are the station name (city or airport identification including state), latitude (degrees), longitude (degrees) and station elevation above sea level (tenths of meters). Remaining data values follow the order and descriptions of the Hourly Observations section above beginning with the date and time. After each day's hourly observations, the daily data for that day is given in the following row and monthly data is in the row following the final hourly observations for the last day in the month. Daily and monthly values are as described above.

Special Indicator Appendix:

s = suspect value (appears with value)
T = trace precipitation amount or snow depth (an amount too small to measure, usually < 0.005 inches water equivalent) (appears instead of numeric value)
M = missing value (appears instead of value)
Blank = value is unreported (appears instead of value)

Present Weather Appendix:

AU codes

If AU codes are present they are listed first for weather type. AU codes are acquired from automated weather sensors. Codes for precipitation and obscurations are defined below:

DZ:01 - Drizzle
RA:02 - Rain
SN:03 - Snow
SG:04 - Snow Grains
IC:05 - Ice Crystals
PL:06 - Ice Pellets
GR:07 - Hail
GS:08- Small Hail an/or Snow Pellets
UP:09 - Unknown Precipitation
BR:1 - Mist
FG:2 - Fog
FU:3 - Smoke
VA:4 - Volcanic Ash
DU:5 - Widespread Dust
SA:6 - Sand
HZ:7 - Haze
PY:8 - Spray
PO:1 - Well developed dust/sand whirls
SQ:2 - Squalls
FC:3 - Funnel CLoud, Waterspout or Tornado

SS:4 - Sandstorm
DS:5 - Duststorm

The codes above could be preceded with a combination of the following descriptors:

- = light
+ = heavy
VC = vicinity (apparent but not at point of observation)
MI = shallow
PR = partial
BC = patches
DR = low drifting
BL = blowing
SH = showers
TS = thunderstorm
FZ = freezing

AW codes

Depending on equipment used at the location, some automated stations report AW codes either with or instead of AU codes. AW codes appear after AU codes (separated by a "|") when present. AW codes are defined as follows:

HZ:04 - Haze, smoke, or dust in suspension in the air, visibility equal to or greater than 1km
FU:05 - Smoke
DU:07 - Dust or sand raised by wind at or near the station at the time of observation, but no well‑developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen or, in the case of ships, blowing spray at the station
BR:10 - Mist
11 - Diamond dust
12 - Distant lightning
SQ:18 - Squalls
20 - Fog (during preceding hour but not at time of observation)
21 - Precipitation (during preceding hour but not at time of observation)
22 - Drizzle (not freezing) or snow grains (during preceding hour but not at time of observation)
23 - Rain (not freezing) (during preceding hour but not at time of observation)
24 - Snow (during preceding hour but not at time of observation)
25 - Freezing drizzle or freezing rain (during preceding hour but not at time of observation)
26 - Thunderstorm (with or without precipitation) (during preceding hour but not at time of observation)(during preceding hour but not at time of observation)
27 - Blowing or drifting snow or sand (during preceding hour but not at time of observation)
28 - Blowing or drifting snow or sand, visibility equal to or greater than 1 km (during preceding hour but not at time of observation)
29 - Blowing or drifting snow or sand, visibility less than 1 km (during preceding hour but not at time of observation)
FG:30 - Fog
FG:31 - Fog or ice fog in patches
FG:32 - Fog or ice fog, has become thinner during the past hour
FG:33 - Fog or ice fog, no appreciable change during the past hour
FG:34 - Fog or ice fog, has begun or become thicker during the past hour
FG:35 - Fog, depositing rime
40 - Precipitation
41 - Precipitation, slight or moderate
42 - Precipitation, heavy
43 - Liquid precipitation, slight or moderate
44 - Liquid precipitation, heavy
45 - Solid precipitation, slight or moderate

46 - Solid precipitation, heavy
47 - Freezing precipitation, slight or moderate
48 - Freezing precipitation, heavy
DZ:50 - Drizzle
DZ:51 - Drizzle, not freezing, slight
DZ:52 - Drizzle, not freezing, moderate
DZ:53 - Drizzle, not freezing, heavy
FZDZ:54 - Drizzle, freezing, slight
FZDZ:55 - Drizzle, freezing, moderate
FZDZ:56 - Drizzle, freezing, heavy
DZ:57 - Drizzle and rain, slight
DZ:58 - Drizzle and rain, moderate or heavy
RA:60 - Rain
RA:61 - Rain, not freezing, slight
RA:62 - Rain, not freezing, moderate
RA:63 - Rain, not freezing, heavy
FZRA:64 - Rain, freezing, slight
FZRA:65 - Rain, freezing, moderate
FZRA:66 - Rain, freezing, heavy
RA:67 - Rain or drizzle and snow, slight
RA:68 - Rain or drizzle and snow, moderate or heavy
SN:70 - Snow
SN:71 - Snow, slight
SN:72 - Snow, moderate
SN:73 - Snow, heavy
PL:74 - Ice pellets, slight
PL:75 - Ice pellets, moderate
PL:76 - Ice pellets, heavy
SG:77 - Snow grains
IC:78 - Ice crystals
80 - Showers or intermittent precipitation
SHRA:81 - Rain showers or intermittent rain, slight
SHRA:82 - Rain showers or intermittent rain, moderate
SHRA:83 - Rain showers or intermittent rain, heavy
SHRA:84 - Rain showers or intermittent rain, violent
SHSN:85 - Snow showers or intermittent snow, slight
SHSN:86 - Snow showers or intermittent snow, moderate
SHSN:87 - Snow showers or intermittent snow, heavy
HAIL:89 - Hail
TS:90 - Thunderstorm
TS:91 - Thunderstorm, slight or moderate, with no precipitation
TS:92 - Thunderstorm, slight or moderate, with rain showers and/or snow showers
TS HAIL:93 - Thunderstorm, slight or moderate, with hail
TS:94 - Thunderstorm, heavy, with no precipitation
TS:95 - Thunderstorm, heavy, with rain showers and/or snow
TS+HAIL:96 - Thunderstorm, heavy, with hail
+FC:99 - Tornado

MW codes

Depending on equipment used at the location, manually augmented stations report MW codes either with or instead of AU and AW codes. MW codes appear last, after AU and AW codes (all three types are separated by a "|") when present. MW codes are defined as follows:

FU:04 - Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes
HZ:05 - Haze
DU:06 - Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation
DU:07 - Dust or sand raised by wind at or near the station at the time of observation, but no well‑developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen or, in the case of ships, blowing spray at the station
DU:08 - Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm
DU:09 - Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour
BR:10 - Mist
FG:11 - Patches of shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 meters on land or 10 meters at sea
FG:12 - More or less continuous shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 meters on land or 10 meters at sea
13 - Lightning visible, no thunder heard
14 - Precipitation within sight, not reaching the ground or the surface of the sea
15 - Precipitation within sight, reaching the ground or the surface of the sea, but distant, i.e., estimated to be more than 5 km from the station
16 - Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station
TS:17 - Thunderstorm, but no precipitation at the time of observation
SQ:18 - Squalls at or within sight of the station during the preceding hour or at the time of observation
FC:19 - Funnel cloud(s) (Tornado cloud or waterspout) at or within sight of the station during the preceding hour or at the time of observation
20 - Drizzle (not freezing) or snow grains not falling as shower(s) (during the preceding hour but not at the time of observation)
21 - Rain (not freezing) not falling as shower(s) (during the preceding hour but not at the time of observation))
22 - Snow not falling as shower(s) (during the preceding hour but not at the time of observation)
23 - Rain and snow or ice pellets not falling as shower(s) (during the preceding hour but not at the time of observation)
24 - Freezing drizzle or freezing rain not falling as shower(s) (during the preceding hour but not at the time of observation)
25 - Shower(s) of rain (during the preceding hour but not at the time of observation)
26 - Shower(s) of snow or of rain and snow (during the preceding hour but not at the time of observation)
27 - Shower(s) of hail (Hail, small hail, snow pellets), or rain and hail (during the preceding hour but not at the time of observation)
28 - Fog or ice fog (during the preceding hour but not at the time of observation)
29 - Thunderstorm (with or without precipitation) (during the preceding hour but not at the time of observation)
DU:30 - Slight or moderate duststorm or sandstorm has decreased during the preceding hour
DU:31 - Slight or moderate duststorm or sandstorm no appreciable change during the preceding hour
DU:32 - Slight or moderate duststorm or sandstorm has begun or has increased during the preceding hour
DU:33 - Severe duststorm or sandstorm has decreased during the preceding hour
DU:34 - Severe duststorm or sandstorm no appreciable change during the preceding hour
DU:35 - Severe duststorm or sandstorm has begun or has increased during the preceding hour
DRSN:36 - Slight or moderate drifting snow generally low (below eye level)
DRSN:37 - Heavy drifting snow generally low (below eye level)
BLSN:38 - Slight or moderate blowing snow generally high (above eye level)
BLSN:39 - Heavy blowing snow generally high (above eye level)
FG:40 - Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer
FG:41 - Fog or ice fog in patches
FG:42 - Fog or ice fog, sky visible, has become thinner during the preceding hour
FG:43 - Fog or ice fog, sky invisible, has become thinner during the preceding hour
FG:44 - Fog or ice fog, sky visible, no appreciable change during the preceding hour
FG:45 - Fog or ice fog, sky invisible, no appreciable change during the preceding hour
FG:46 - Fog or ice fog, sky visible, has begun or has become thicker during the preceding hour
FG:47 - Fog or ice fog, sky invisible, has begun or has become thicker during the preceding hour
FG:48 - Fog, depositing rime, sky visible
FG:49 - Fog, depositing rime, sky invisible

DZ:50 - Drizzle, not freezing, intermittent, slight at time of observation
DZ:51 - Drizzle, not freezing, continuous, slight at time of observation
DZ:52 - Drizzle, not freezing, intermittent, moderate at time of observation
DZ:53 - Drizzle, not freezing, continuous, moderate at time of observation
DZ:54 - Drizzle, not freezing, intermittent, heavy (dense) at time of observation
DZ:55 - Drizzle, not freezing, continuous, heavy (dense) at time of observation
FZDZ:56 - Drizzle, freezing, slight
FZDZ:57 - Drizzle, freezing, moderate or heavy (dense)
DZ:58 - Drizzle and rain, slight
DZ:59 - Drizzle and rain, moderate or heavy
RA:60 - Rain, not freezing, intermittent, slight at time of observation
RA:61 - Rain, not freezing, continuous, slight at time of observation
RA:62 - Rain, not freezing, intermittent, moderate at time of observation
RA:63 - Rain, not freezing, continuous, moderate at time of observation
RA:64 - Rain, not freezing, intermittent, heavy at time of observation
RA:65 - Rain, not freezing, continuous, heavy at time of observation
FZRA:66 - Rain, freezing, slight
FZRA:67 - Rain, freezing, moderate or heavy
RA:68 - Rain or drizzle and snow, slight
RA:69 - Rain or drizzle and snow, moderate or heavy
SN:70 - Intermittent fall of snowflakes, slight at time of observation
SN:71 - Continuous fall of snowflakes, slight at time of observation
SN:72 - Intermittent fall of snowflakes, moderate at time of observation
SN:73 - Continuous fall of snowflakes, moderate at time of observation
SN:74 - Intermittent fall of snowflakes, heavy at time of observation
SN:75 - Continuous fall of snowflakes, heavy at time of observation
76 - Diamond dust (with or without fog)
SG:77 - Snow grains (with or without fog)
SN:78 - Isolated star-like snow crystals (with or without fog)
PL:79 - Ice pellets
SHRA:80 - Rain shower(s), slight
SHRA:81 - Rain shower(s), moderate or heavy
SHRA:82 - Rain shower(s), violent
SHRASN:83 - Shower(s) of rain and snow mixed, slight
SHRASN:84 - Shower(s) of rain and snow mixed, moderate or heavy
SHSN:85 - Show shower(s), slight
SHSN:86 - Snow shower(s), moderate or heavy
SH:87 - Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, slight
SH:88 - Shower(s) of snow pellets or small hail, with or without rain or rain and snow mixed, moderate or heavy
SH:89 - Shower(s) of hail (hail, small hail, snow pellets), with or without rain or rain and snow mixed, not associated with thunder, slight
SH:90 - Shower(s) of hail (hail, small hail, snow pellets), with or without rain or rain and snow mixed, not associated with thunder, moderate or heavy
RA:91 - Slight rain at time of observation, thunderstorm during the preceding hour but not at time of observation
RA:92 - Moderate or heavy rain at time of observation, thunderstorm during the preceding hour but not at time of observation
93 - Slight snow, or rain and snow mixed or hail (Hail, small hail, snow pellets), at time of observation, thunderstorm during the preceding hour but not at time of observation
94 - Moderate or heavy snow, or rain and snow mixed or hail(Hail, small hail, snow pellets) at time of observation, thunderstorm during the preceding hour but not at time of observation
TS:95 - Thunderstorm, slight or moderate, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation
TS:96 - Thunderstorm, slight or moderate, with hail (hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation

TS:97 - Thunderstorm, heavy, without hail (Hail, small hail, snow pellets), but with rain and/or snow at time of observation, thunderstorm at time of observation
TS:98 - Thunderstorm combined with duststorm or sandstorm at time of observation, thunderstorm at time of observation
TS:99 - Thunderstorm, heavy, with hail (Hail, small hail, snow pellets) at time of observation, thunderstorm at time of observation

Wind Chill Chart

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times 30 minutes 10 minutes 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperatur · (°F) V= Wind Speed (mph)

Effective 11/01/01

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger